

## NORTH PACIFIC OCEAN

By WILLIS E. HURD

The North Pacific anticyclone, as in the preceding July, continued to dominate the weather of the upper two-thirds of the eastern half of the ocean; and, as in that month, it extended far up into the Bering Sea, entirely superceding the Aleutian Low, except on a few days, the average pressure even at St. Paul being 30.04 inches, or 0.28 inch above the normal. Only on the lower slope of the HIGH was the barometer below the average, Honolulu slightly below, and Midway Island as much as 0.12 inch below. A slight depression lay over the western part of the Gulf of Alaska, but even there the barometer was higher than the average for the month.

The accompanying table gives the principal barometric data for several island and coast stations in west longitudes.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean and adjacent waters, August, 1930

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Point Barrow <sup>1 2</sup>	29.83		30.24	26th	29.30	14th.
Dutch Harbor <sup>1 3</sup>	30.09	+0.19	30.46	13th	29.44	3d.
St. Paul <sup>1 3</sup>	30.04	+0.28	30.44	13th	29.42	4th.
Kodiak <sup>1 3</sup>	29.94	+0.09	30.38	27th	29.60	8th.
Midway Island <sup>1 4</sup>	29.97	-0.12	30.16	4th	29.84	15th.
Honolulu <sup>6</sup>	29.98	-0.03	30.08	7th	29.82	10th.
Juneau <sup>6</sup>	30.05	+0.03	30.30	26th	29.78	12th.
Tatoosh Island <sup>6 7</sup>	30.06	+0.01	30.23	25th	29.82	14th.
San Francisco <sup>6 7</sup>	29.98	+0.04	30.13	12th	29.83	31st.
San Diego <sup>6 7</sup>	29.93	+0.04	30.09	12th	29.81	27th.

<sup>1</sup> P. m. observations only.

<sup>2</sup> For 29 days.

<sup>3</sup> For 30 days.

<sup>4</sup> For 28 days.

<sup>5</sup> And on the 6th.

<sup>6</sup> A. m. and p. m. observations.

<sup>7</sup> Corrected to 24-hour mean.

Comparatively few cyclones invaded the middle and higher latitudes of the North Pacific, along the well-traveled steamship routes, during August. Such few as did occur and occasioned winds of gale force were confined to the western half of the ocean and were partly of tropical origin. However, one of the severest gales of the month reported by one of our vessel observers, an east wind of hurricane velocity, accompanied by a barometer reading of 29 inches, was associated with a cyclone of the extra-tropics. It was encountered by the American motorship *Triumph* in latitude 42° 30' N., longitude 172° E. On the same date other steamships experienced gales of force 9 at varying distances to the westward. On the 30th a fresh gale was reported in the vicinity of Hakodate, Japan.

Elsewhere is an account of the two typhoons of the month, by the Rev. José Coronas, S. J., of the Manila Observatory. One of the Weather Bureau's observing vessels, the *Triumph*, passed through the earlier typhoon on the 10th, experiencing a northwest gale of force 11, with a pressure of 29 inches, very close to the Nansei Islands. Another vessel, the American steamer *Sylvan Arrow*, passed through the second typhoon on the afternoon of the 19th and morning of the 20th, touching the outskirts of the central area, with a barometer of 28.80 inches, at 4 a. m. of the 20th, in 33° 45' N., 148° 20' E. Winds of hurricane force were encountered on both dates. On the 21st to 24th the American steamer *President Jefferson* ran into the fresh to whole gales of this cyclone between 30° and 35° N., 150° and 160° E. There are no observations of the storm farther to the

eastward, but it is thus seen that the typhoon which was lost to observation of the Manila Observatory on the 18th can be carried forward from that date for at least six days.

On the 18th a whole east gale was reported in the upper tropic by the American steamer *President Monroe* at some distance south of Midway Island. The lowest barometer reading on the vessel was 29.73 inches. It would be extremely interesting to know if this gale were connected with a tropical cyclone traveling thus far to the eastward out of the beaten path of typhoons.

In the American Tropics there is evidence that a cyclone of some intensity occurred off the Mexican west coast on the 18th to 20th. The earliest reported observation of the storm comes from the American steamer *San Marcos*, which encountered a fresh southeast gale on the 18th about 100 miles south-southeast of Acapulco, followed by a whole southerly gale farther northward on the 19th. The lowest barometer reported was 29.63 inches, read on board the Japanese steamer *Toyama Maru* in 17° 24' N., 102° 48' W. at midnight of the 18th. The wind shifts experienced by the *San Marcos*, and also by the American steamer *Ohioan*, which encountered a gale of force 9 west of Manzanillo, point conclusively to the existence of a cyclone in these waters.

The prevailing wind at Honolulu during August was from the east, with a maximum velocity of 25 miles an hour from the same direction on the 11th.

Fog, while less continuously observed by vessels than in July, was nevertheless frequent along the central and western portions of the northern sailing routes and in the Bering Sea. Both north and south of the Aleutian Islands, and for some distance westward toward northern Japan, fog was observed on from 10 to 16 days. Along the American coast the strip of its greatest frequency, where it was reported as occurring on 13 days, lay off central California. Off Lower California it was reported on three days.

## FIVE SEVERE TYPHOONS OVER THE FAR EAST IN JULY, 1930

By Rev. JOSÉ CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

The past month of July was very stormy in the Far East. Prescinding from other depression or typhoon centers of less importance, we will mention here only five of them as the most important and of greatest intensity.

*Formosa and China typhoon, July 9 to 17.*—The first part of this typhoon is rather indefinite until 6 a. m. of the 11th when the center was shown in our weather map about 100 miles to the southeast of Basco, Batanes Islands, moving west-northwest or northwest by west. From 2 p. m. of the same day it took a decided northerly direction very near to the east of Basco, where the barometric minimum 29.35 inches (745.4 mm.) was recorded at 8 p. m. with winds from northwest. The center passed close to or over the northeastern end of Formosa in the early hours of the 13th, the barometer of Taihoku having fallen to 29.17 inches (741.0 mm.) at 5 a. m.

The steamers *Empress of Russia*, *President Jackson*, and *Tjisondari* were well under the influence of this typhoon very near the northern part of Formosa Channel.

From Formosa the typhoon moved northwestward until 6 a. m. of the 14th, when it began to move northward again along eastern China not far from the coast. On the 15th it recurved northeastward toward north-